

### **REMARKS**

The issues outstanding in the final rejection of December 28, 2009, are the rejections under 35 U.S.C. 112 and 103. Reconsideration of these issues, in view of the following discussion, is respectfully requested.

#### **Rejection Under 35 U.S.C. 112**

Claims 1-19 and 21 have been rejected under 35 U.S.C. 112, second paragraph. It is argued that the recitation in claims 1, 16 and 21 of calcining “in dry air” renders the claim indefinite. While it is believed that one of ordinary skill in the art would understand that a furnace operated in “dry” air is one which no water is present in the furnace atmosphere, it is submitted that the language is superfluous in any case, and has been deleted. Withdrawal of the rejection is respectfully requested.

#### **Rejections Under 35 U.S.C. 103**

Claims 1-4, 6, 7, 12-19 and 21 remain rejected under 35 U.S.C. 103 over Khare ‘091 taken with Dodwell ‘723. Reconsideration of this rejection is again respectfully requested.

As will be recalled, Khare discloses a process for producing a sorbent composition, comprising “contacting a zinc component, an aluminum component, and a dispersant component, to form the mixture; and then...spray drying said mixture to form particles; and then...contacting said particles with a zinc compound, wherein said zinc compound is zinc oxide or a compound convertible to zinc oxide, to form a sorbent composition.” See the abstract. Patentees note that the zinc component (apparently in the first contacting step, prior to spray drying) is zinc oxide, but “may be any zinc compound that combines with alumina to form zinc aluminate” and, at column 1, lines 45-52, list a variety of compounds including sulfide, zinc sulfate, zinc hydroxide, zinc carbonate, zinc acetate, zinc nitrate, zinc chloride, zinc bromide, zinc iodide, zinc oxychloride, and zinc stearate. Patentees conclude that “mixtures of such compounds can also be used.” See column 1, line 52. At column 2, the paragraph bridging to column 3, patentees teach

that the zinc component, alumina component and dispersant component “can be contacted together in any manner known in the art that would form a mixture that is a liquid solution, a slurry, or a paste that is capable of being dispersed in a fluid-like spray.” In the examples of the patent, in every one of the nine preparations disclosed in the example 1 or comparative example 2, patentees combine together zinc oxide, alumina and tin oxide in a dry mixing technique prior to spray drying. Zinc nitrate is not employed, and the components are all apparently simultaneously combined with mixing.

In view of the disclosure of Khare, discussed above, it is respectfully submitted that the patent fails to teach a process in which a mixture of zinc oxide, water, nitric acid *and* zinc nitrate are first combined, and subsequently mixed with alumina. See claims 1 and 21, for example. (It is noted that claim 21, which recites mixing alumina gel “with a mixture of zinc oxide...and...zinc nitrate” clearly require first combining the zinc oxide and nitrates to create the “mixture”, prior to introduction of the alumina.

It is once again submitted that the non-obviousness of the combination of the order of components as stated in the present claims is further evident from the consideration of the examples in the present application. However, it is argued in the final rejection that these examples are not commensurate in scope with the present claims, inasmuch as some examples show previous peptidization of alumina, while other examples show in situ peptidization. The claims, it is argued in the final rejection, do not encompass in situ peptidization.

Although it is believed that the examples show that the timing of peptidization of the alumina is secondary to the order of mixing of the zinc oxide, water, nitric acid and zinc nitrate, prior to mixing with alumina, in order to expedite prosecution, the present claims have been amended so as to clarify that the peptidization is in situ, as clearly supported by the examples, and by page 3, lines 14-20. In example 2, a mixture of zinc oxide and zinc nitrate is combined with previously peptized alumina. The resultant material has a crush strength of 0.83. In example 5, example 2 is repeated, but the proportion of the previously combined zinc oxide, zinc nitrate is 50%. A crush strength of 0.91 is achieved. In example 7, a mixture of zinc oxide and zinc nitrate (plus water and nitric acid) is prepared, and subsequently combined with alumina,

which is then peptized in situ, rather than previously peptized as in examples 2 and 5. A crush strength of 1.05 is achieved. Example 8 also is an embodiment of the invention where the alumina gel is peptized in situ, and a crush strength of 1.12 is achieved. By contrast, in example 4 the components are combined serially: first alumina is combined with zinc oxide, and then with zinc nitrate. A low crush strength of 0.43 is achieved. In example 6, alumina is first combined with zinc oxide, and mixed, and zinc nitrate is not employed. A crush strength lower than the examples in accordance with the invention, 0.71, is achieved. It is accordingly respectfully submitted that the examples establish the non-obviousness of the order of the combination of the components of the catalyst of the invention, which order is not suggested by Khare, even apart from how the alumina is peptized. In order to expedite prosecution, however, the claims have been limited to the most advantageous embodiment, in which unexpectedly high crush strengths of over 1.0 are achieved.

The secondary reference, Dodwell, does not remedy the deficiency of Khare, and it is acknowledged, as stated in the final rejection, that it is not cited to do so. However, it is thus clear that the combination of references fails to suggest the present claims, and withdrawal of this rejection is respectfully requested.

There are two additional rejections under 35 U.S.C. 103, as set forth in the final rejection. These rejections all employ Khare as the primary reference. Accordingly, in view of the above-discussed deficiencies, it is clear that these rejections should also be withdrawn, and the same is respectfully requested.

The claims of the application are submitted to be in condition for allowance. However, should the Examiner have any questions or comments, he is cordially invited to telephone the undersigned at the number below.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

/Harry B. Shubin/

---

Harry B. Shubin, Reg. No. 32,004  
Attorney/Agent for Applicant(s)

MILLEN, WHITE, ZELANO  
& BRANIGAN, P.C.  
Arlington Courthouse Plaza 1, Suite 1400  
2200 Clarendon Boulevard  
Arlington, Virginia 22201  
Telephone: (703) 243-6333  
Facsimile: (703) 243-6410

Attorney Docket No.: PET-2130

Date: March 29, 2010  
HBS/tls